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ABSTRACT

A Media Learning Resources Committee was appointed by the Chancellor to study the use of media at UCLA and to make recommendations concerning its role in the university. Section 1 of the committee report presents the conclusions derived from the policy/program recommendations and operational suggestions of section 2. These are supported by background information in section 3. There the present status, reasons for change, and a conceptual basis for planning are presented. The appendixes contain the Carnegie Commission recommendations on instructional technology in higher education, an outline of UCLA's media resources and activities, a discussion of some new technology, and general policy considerations. (WH)

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"...LEARNING TO USE THE TOOLS..."

Media Learning Resources at UCLA

REPORT OF THE MEDIA LEARNING
RESOURCES COMMITTEE

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This paper contains the report of the Media Learning Resources Committee, appointed by the Chancellor to study the use of media at UCLA and to make recommendations concerning its role in the University. Section I of the paper presents the Committee's conclusions which led to their recommendations set forth on pages 5 - 15. Section III contains supporting material for the recommendations.

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I. CONCLUSIONS

The committee was formed to consider the roles of audio-visual media in the future of UCLA and to assist in planning future directions for the UCLA Media Center. A basic premise was that this planning must relate to the development of the teaching-learning processes of the University. Media are of interest to the extent that they contribute to and, perhaps, accelerate that development. The Committee believes that media have a large potential for that purpose. On balance although important policy issues and contingencies intervene, the benefits to be achieved do justify substantial investment in the near term.

The University is in a difficult position. To continue in the long term to deliver quality education in accustomed ways it needs more funds than it seems likely to get from usual sources. It must either find less costly ways of operating without loss of quality, or adopt programs that attract or generate additional funds. Selective use of media can help in both ways. In addition, use of media may serve to enhance quality and extend the community of well-educated persons.

Active interest among UCLA faculty and students in uses of media is high and increasing. Uses are very diverse. For the most part, media and materials, it should be noted, do not substitute directly for traditional instruction. They can, however, provide faculty with new tools, enabling them to produce innovative solutions to certain problems of instructional design. They can also multiply the number of students who can benefit from selected instructional events, thereby reducing the "unit cost" of delivering some educational experiences. They can preserve for subsequent cohorts certain valuable educational experiences which would otherwise be lost but to the students present at a given time. In addition, the interests of students would be well served by inclusion in the curriculum of options which stimulate their creativity, demonstrate the uses of media in problem-solving in various fields, awaken their interest in the potentials of a new class of tools, enable them to gain literacy in some new "languages" and art forms, become parties

to new directions in research, and record important observations in new ways. At the same time, extended use of media can permit the University to serve a much broader segment of the community. Such service, bringing the University closer to the people of the State, could strengthen its position among them and broaden its base of support.

Because we believe that use of audio-visual media can importantly enrich aspects of the educational process, reduce unit costs, or offer major benefits to the faculty, the students, the University, and the community as a whole, we believe that certain sizable short-term investments are justified and should be made. At the same time, the longer term, more massive problems and opportunities need continuing examination and planning. These activities should be carried forward with energy and imagination. This can only be done with explicit support from the administration in terms of 1) funding, 2) academic incentives, 3) structural arrangements, and 4) a clear mandate. This support must, in turn, be built upon a mechanism for faculty participation in generating and monitoring policy and programs.

Past difficulties and shortcomings in media-related services can be traced in part to the lack of involvement in policy and program development and evaluation of interested parties, of whom there are many in the University. In a changing social, economic, and technological environment, maintenance of UCLA's position of excellence in higher education requires prompt and adequate programmatic support of further media development and use. Initiation of such action should not be delayed pending the formation of new structures, or the performance of extensive studies, since the Media Center as now constituted can carry forward much of this work while new arrangements are being made and new knowledge is being generated.

While not all issues have been resolved, the Committee is convinced that the opportunities for instructional media use and the growing and diversifying demand for such use justify vigorous support from all sectors of the University. The Committee has concluded that, on balance, the risks inherent in unwarranted temporizing or reluctance to move without exhaustive documentation can be more costly at this juncture than the risks associated with moving clearly and expeditiously in indicated directions.

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II. RECOMMENDATIONS AND SUGGESTIONS

On the basis of its investigations and discussions, it is the judgment of the Committee that the rate of planned development and use of media on this campus must be increased to meet the educational challenge we face. Objectives include:

- A comprehensive program of selective development and use of media learning resources together with attention to careful planning, evaluation and modification of the program of development and use as it proceeds.

- Facilitating and motivating the use by faculty and students of the means already at hand.

- Institutionalizing faculty and student participation in the decision process leading to the development of policies, programs, and arrangements pertaining to media matters.

- Seeking joint arrangements with other UC campuses and other institutions to originate and exchange mutually useful programs on a cost-effective basis.

- Integrating the use of media in learning by students on campus with extensive involvement of media in the lifelong learning experience both on and off campus.

The recommendations and suggestions below focus on these objectives.

Policy/Program Recommendations

1. Active Support

We recommend that: As part of a comprehensive strategy for reducing costs, improving instructional quality, maintaining leadership, increasing accessibility of UCLA's educational endeavors, and broadening the base of the university's support, the Chancellor's Office institute at once an active program of planning,

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funding, and administrative facilitation for substantially increased development and use of media learning resources.

> There can be little doubt that media will play an increasing part in education, and that universities will be deeply involved. The uncertainty concerns the roles the universities will choose to adopt, and the rate and path of involvement each will elect. This Committee believes it is time for UCLA to make a judicious, but determined move now. Opportunities and pressures exist to do so. There is growing interest and activity among faculty in the use of audio-visual and related media resources to enhance teaching and learning. Obstacles and disincentives need to be removed, and more active and planned support provided. These recommendations constitute a portion of the needed program.

2. Director of Media Services and Development

We recommend that: The Chancellor act as promptly as possible to select and appoint a Director of Media Services and Development.

> Considerations of convenience, efficiency, and economy may lead, from time to time, to modification of the arrangements used for developing media learning resources and delivering services and materials. A fully qualified and authorized Director is needed, who will be responsible to assure coherent and continuing attention to media matters, symbolize the university's concern with and sanction for educational use of media, and improve interaction of media-related professionals with faculty, students, administration and outside organizations. The Director, when appointed, should give early consideration to contracting for the services of an outside management consultant to conduct periodic management audits of the Media Center and other media-related activities, and to make recommendations to promote effectiveness and efficiency of media service.

3. Policy Advisory Board

We recommend that: The Chancellor promptly establish a Policy Advisory Board to: recommend policy, develop criteria for selection of a Director of Media Services and Development and any other top level media-related personnel, and provide guidance on such matters as planning, setting of priorities, determining

directions and rates of development, services to be offered, relations with faculty, students and community, judgment of performance, and other matters. It should be broadly representative of the faculty. In addition, it should include student representatives, a librarian, and others as appropriate. It should make recommendations and provide guidance to the Chancellor's office and to any other office in the reporting chain between media units and the Chancellor's office, on media-related matters such as provision of incentives for faculty to develop and use media effectively, evaluation of Media Center plans and performance including cost-effectiveness, needs for support of media activities, and relations regarding media with other campuses, and the community.

The Policy Advisory Board should be both a sounding board for proposed Media Center activities, a source of guidance to the Media Center, and a mechanism for facilitating relationships between the Center and the rest of the university community.

4. Support of Studies

We recommend that: The Policy Advisory Board have an adequate budget to be used for conducting and/or commissioning studies and research related to its functions.

The concept of a responsive Media Center, while appealing, is insufficient. The Center must be able to provide leadership and catalytic effect in influencing the modes and extent of media resources development and use in the university's educational endeavor. Among the concerns of the proposed Board might therefore be the following five recommendations:

a) Actual & Prospective Benefits

We recommend that: A continuing study of cost-effectiveness and of actual and prospective benefits of media use under various development strategies and arrangements be developed to help support future decision-making with respect to media use and organization.

Approaches involving the use of media are almost inevitably viewed as cost items, competing for scarce resources with more traditional modes of instruction. Cost-benefit analyses of media use by this University, and more adequate attention to the benefit, and

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prospective benefit, are needed. Careful attention should be given to alternative approaches, since both costs and benefits depend upon the particular approach chosen.

b) Economies of Scale

We recommend that: A planned approach be developed for achieving the economies available through media use at proper scale.

The media-related activity so far engaged in, while substantial and increasing, has not, in general, been sufficient to provide the economies of scale of which media are capable in educational applications. Approach to such use at scale is not typically within either the purview or the interest area of the individual faculty member but could serve the purposes of the whole university if properly carried out. Hence, additional planning is needed. The Board should commission appropriate studies.

c) University-wide System

We recommend that: The feasibility and desirability of cooperation throughout the University of California system for the creation and distribution of media materials be explored. UCLA should take the initiative in a joint study with other campuses.

The single campus is probably not the best unit to reap the benefits of scale inherent in the use of media. A university-wide system is more likely to be of adequate scale. Consideration should be given to an intercampus arrangement for production and distribution.

d) Relation to Outside Events and Organizations

We recommend that: Continuing research and program development be undertaken to relate UCLA's media activities to events, organizations and the community beyond the campus. This program could be jointly undertaken by the Media Center, University Extension, the Communications Studies Program, the School of Law, the Graduate School of Education and other appropriate units.

Such developments as cable TV systems, satellite broadcasting, two-way communications, educational packages, government policies and laws bearing on media use for educational and quasi-educational purposes, and the decisions and actions of other educational institutions all have implications for UCLA. The university would do well to be in a pro-active, rather than a reactive posture on these matters, since frequency allocations, pricing schedules, cabling arrangements, and other preemptive events can make important developments irreversible. This means generating an idea, in advance, of the implications of these and other prospective events in time to take constructive action. This in turn implies a continuing study of the future of the media/education field.

e) Survey of Use

We recommend that: An annual campus-wide survey of use of media for educational purposes be conducted and published by the Survey Research Center in cooperation with the Media Center. The survey should include the ways media are being used, ideas for their use, and judgments on their value by those who have used them or seen them used. A sample survey of selected other institutions should also be included.

5. Instructional Improvement

We recommend that: An Instructional Resources Laboratory or similar instrumentality be developed whose purpose would be to assist those with instructional responsibilities, who wish to do so, to improve their instructional planning, instructional design, and other learning-related activities. A part of the Laboratory's functions would focus on media-based approaches.

The organization, administrative location, staffing, funding, and tradition of the Media Center all derive from a concept which appears to assume that the initiative for use of media in instruction arises from individual faculty members who must approach the Center for help. But the university cannot necessarily depend upon the spontaneous impulses of individual faculty members to determine all of its future development of instructional approaches, including, but not limited to, the instructional uses of media. A learning process for prospective, but perhaps as yet unidentified, users is also needed. And the needed learning is not limited

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to the use of media. Some arrangement for improving the general instructional approaches of faculty and teaching assistants is also needed. Consequently we recommend that a design study be commissioned, either by a faculty committee or by outside consultants, of the structure and operation of the Instructional Resources Laboratory mentioned above. A part of such a Laboratory's activities might well focus on media-based approaches. The Media Center could become an important core of such a Laboratory, managing thereby to bridge the gap that has sometimes separated it from its faculty constituency. Alternatively, it could be a collateral organization, operating independently but cooperatively. The "media laboratory," in which faculty could experiment with and be instructed in the use of media, that is called out in the Center's Five-Year Planning document, is a recommended step in the needed direction.

6. Planning

We recommend that: A continuing planning process be instituted by the Media Center immediately, covering a five-year period, leading to an annually-revised five-year plan. An integral part of the process must be an evaluation plan covering results of previous activities.

Planning cannot wait, and should be started immediately. Certain short-term steps are urgently needed and should not be delayed, but they should be treated as subject to modification as planning proceeds.

7. Setting of Priorities

We recommend that: In developing policies for selecting among potential projects, the management of the Media Center or of any activity involving the use of media consider criteria such as the following: Other things being equal,

a. Prefer items that will tend to generate and guide subsequent improvement, that are generalizable, that can act as models.

b. Select activities that have programmatic consequences; e.g., pilot films for prospective series, beginning a new, needed service to an important constituency.

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c. Invest in activities that relate to each other in mutually reinforcing ways, and in which economies are possible through combining; e.g., use of film in a course, the product of which can become part of the oral history archive.

d. Invest in projects which will help attract outside support; i.e., where a multiplier effect is available.

e. Select applications which promise exposure to large numbers of students (and others) so that unit cost is kept low and efficiency high.

f. Choose items whose results are demonstrable, and can be properly evaluated.

Naturally, these criteria are of unequal weight and variable applicability; there are possible cases in which some other consideration would out-weigh them. Nevertheless, it seems useful to have some such list in hand as strategy is developed.

8. Funds

We recommend that: While every effort should be made to develop policies which will allow the recovery of media costs from users outside the University, and the generation of funds for further development of educationally relevant media materials, the Chancellor should seek increased funds to support the development of Recommendation 1. In addition there should be a subsidy for capital, building, and equipment development.

Many media materials produced at UCLA have been intended for use by UCLA alone; use by other institutions has been regarded as a distinctly secondary consideration. The benefits derived have therefore tended to be limited, and the costs to be allocated over just the originating institution's uses. This is like writing and publishing textbooks for a single campus. Recovery of costs and generation of funds through "publication" arrangements could produce extensive educational benefits. Moreover, the public interest is likely to motivate governments and private foundations

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to support deserving programs and projects.

At the same time, the University must commit its own funds so that media development and use can grow in line with University purposes, and can be kept to the needed degree independent of outside decisions.

9. Incentives

We recommend that: Formal recognition be given by the Chancellor (and by the Academic Senate) to creation of deserving media materials as a contribution to the domain of knowledge comparable to research activity or the writing of a scholarly article or book. In addition arrangements are needed to provide faculty members who develop media materials for educational purposes a share in the proceeds generated by the use and marketing of those materials, in a fashion analogous to textbook royalties but possibly based on a different model. The sponsoring department or school also should receive a fair share of the proceeds, usable to further its educational objectives either through development of additional media materials or in other ways at its option. Naturally, any return beyond that which goes to the faculty members and the department or school should be used by the University to sponsor research, improve education, or in other ways be appropriate to its mission.

Despite evidence of interest and activity across the University, incentives for faculty members and departments and schools to devote time and creative energy to promising media-based educational approaches (as to improved instructional approaches generally) could be very beneficial.

10. Faculty Responsibility

We recommend that: Faculty members throughout the University might well reassess more actively the extent to which they ought to focus on instructional planning and design, and on selecting the best ways available to assist students in attaining desired competencies, possibly through the use of somewhat different instructional approaches. Department Chairmen and Deans should encourage their members to do so individually and jointly. The Office of Academic Change should solicit ideas and proposals for new approaches on a

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regular basis (not only when funds are available, but as a basis for soliciting funds and other support), and should work with faculty members to develop their proposals. Faculty members should feel encouraged to make appropriate suggestions and proposals for action to the Media Advisory Board, when it is formed, and to the Instructional Resources Laboratory, when it is formed.

> Without aggressive faculty initiative and involvement, funds, equipment, facilities, and administrative support will be ineffective. Making known faculty members' ideas and proposals for action can be an important influence on sources of service and support.

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Operational Recommendations and Suggestions

11. TV Colorization

We recommend that: Immediate plans be devised by the Media Center for colorization of the television facilities of the campus. Funds to support such equipment and facilities improvement should be actively sought by the Chancellor's Office.

> The University's present television equipment and facilities are largely outdated. Specifically, the black-and-white television system is inadequate to emerging needs. While color capability is expensive it is needed to prevent instant obsolescence of future products.

12. Grant Proposals

We suggest that: The Office of the Chancellor issue a policy statement to the effect that, whenever possible and appropriate, proposals for extramural funds to be used for purchase or use of media equipment should also request support for equipment maintenance. The Media Center should participate by supplying estimates for this purpose. The Office of Extramural Support should remind proposers of this policy.

13. Media Materials Rating Exchange

We recommend that: The Media Center ask users of media materials to provide ratings, on a specified set of scales, of each item used or reviewed for use, so that this information can be passed on to others for their guidance.

> Ratings should be shared or exchanged with other institutions whenever possible. Standard rating scales should be sought.

14. Efficient Use of Equipment

We suggest that: An analysis be made of the potential of a "market system" on campus for the acquisition, use, and exchange of media equipment. It could work as follows:

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a. As at present, any department or other unit which wished to do so and had the funds, could purchase on the open market any quipment it wanted, and handle it in any way it saw fit.

b. The Media Center would continue to buy certain general purpose equipment which it would rent out or lend to users on some equitable basis and attempt to see used most efficiently. Naturally in this kind of arrangement some delays and dissatisfactions are inevitable, but the policy for establishing priority, or for deciding upon the need to purchase additional equipment would be established with inputs by the Advisory Board, and the dissatisfactions could be kept within tolerable limits.

c. The Media Center would assume the responsibility of maintaining an internal-to-UCLA market in used media equipment. It would maintain a price list of used equipment based upon the current commercial market. It would stand ready to purchase from any department or other unit any piece of equipment at something over the offering price for that equipment on the outside, and to sell to any department or other unit any piece of equipment at something under the asking price for that equipment on the outside.

There would thus be an incentive for underutilized equipment to be unloaded by the owning department or unit, which could then use the money or credit for other purposes, depending upon its own priorities. (These might include the purchase or rental of other media equipment, but need not do so.) There would also be a price incentive for departments or units to procure their equipment from the Media Center whenever possible. The total effect would be to improve the efficiency of utilization of all University-owned equipment. The Center would see to the maintenance of equipment, and could also make recommendations about purchase, lease or other equipment-related activities. The budget of the Center would have to be increased to allow it to sustain the losses inherent in its role as broker but the increase in total efficiency of use should more than make up for the apparent increase in direct expense. In addition, departments and units would have greater opportunity

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to use their total resources to their best advantage.

The search problem would also be significantly improved. All available equipment would be procurable through the Media Center, which could advise on what suits the user's needs best, etc., and could help the user ask the right questions, as well as answering them. As a result, better relations between the Center and its constituency would likely result, some learning by prospective users would likely occur, and beneficial use would increase.

15. Equipment Index

We suggest that: The Media Center organize and maintain a comprehensive index of equipment available, classified in user-oriented terms.

At present, if a user wishes to find out if and where a given piece of equipment is located on campus, he must request and consult a computer printout whose organization is far from well-suited to his search task. That is, equipment is classified in terms of its name, manufacturer, etc., rather than in terms of its use, limitations, etc. The search at present is arduous and time-consuming. A user-oriented index could simplify the task of the interested but unsophisticated prospective user, and as a result could encourage more frequent and effective use of available equipment. Moreover, a record of the requests in this form would enable the procurement of equipment for which adequate demand exists.

16. Lease Arrangements for Films, etc.

We suggest that: The Media Center attempt to arrange with suppliers of "media packages" to UCLA users, for rental or lease charges to be applied against purchase by the University after repeated use.

Such an arrangement exists at other universities, and there is every reason to believe that it is possible here.*

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* For example, University of Southern California Film Library, Los Angeles, California

III. BACKGROUND

Introduction

Audio-visual media, broadly defined, constitute an important set of resources which can greatly assist the University in meeting its responsibility to provide the best in all levels of postsecondary education to the people of the State of California and beyond.

The University need not be concerned that a commitment to expand the use of audio-visual media would be a radical departure from effective educational practices. Abundant and growing experience on this campus and throughout the UC system attests to its utility and to the enthusiasm shown toward its numerous applications by both faculty and students. Moreover, respected institutions which have gone considerably beyond UCLA in use of media appear to feel justified in expanding its use even further. No evidence exists of an educational decrement resulting from the systematic use of media in higher education by qualified educators supported by competent audio-visual media professionals. On the contrary, audio-visual communication media can substantially augment such traditional educational tools as books, lectures, and seminars.

Familiar uses of media such as the projection of charts or the showing of films may be supplemented by newer uses such as video for magnification or showing, for instance, animal behavior under various experimental conditions. Cassette tapes may be used for out-of-class study. Records of activities may be made through the use of tape, video, or film and used for the analysis of such things as interactions in courses of teacher training; clinical methods in the social and health sciences; physical techniques (as in dance); and language learning. Use of media in collecting biased and unbiased records of events can be of great importance in social science courses such as anthropology and psychology, in professional schools such as Law and Medicine, and in the natural sciences. Traditional forms of data assembly may be evaluated against an unedited television version of the event under consideration. Comparisons of the biasing effects of the media themselves can also be studied. Such applications of media emphasize the data collection skills important to research.

Most of the educational prospects of media have yet to be exploited. Some hint of the possibilities was displayed in John Goodlad's multi-media "No More Mondays." Other very different ones were explored preliminarily in the C. Z. Wilson Juan Lara Junior College Consortium Media Project in which the Media Center played a significant role. Still others are

evident in the Moerman-McCarty ethnographic application, and many are being used in connection with health care and medicine; e.g., The Social Seminar Series, drug training films made for the National Institute of Mental Health, and the Extension's Medical Media Network.

It is undeniable that audio-visual communications media in the form of television and motion pictures command enormous amounts of attention from people of all ages, (it is reliably estimated that, by the time a person reaches age 18, he/she has watched 25,000 hours of TV) and that, as a result of exposure to these media, important behavioral, attitudinal, and cognitive changes occur. Which of these changes can be properly referred to as "educational" depends, of course, on the definition of education one uses. But it seems problable that more people became familiar with the Forsytes via TV than through reading Galsworthy or taking courses in English Literature; that more have learned something of marine biology through watching Jacques Cousteau than through University breadth courses in the subject; that more became sensitive to the effects of prejudice through watching "The Eye of the Storm" than through sociology or psychology courses; that more came to understand the connected sweep of the development of western civilization through watching Kenneth Clark than through reading, say, Arnold Toynbee. The point is not that the experiences are equivalent, because they are certainly not. But media have the ability to generate a following, to motivate attention to educationally valid experiences, to survey vast amounts of material, and to integrate those experiences in ways that may not be entirely understood at this time, but are undeniably efficacious. And they do influence people's expectations, and probably also responsiveness to rates and complexities of stimulation. Consequently institutions of higher education have both an incentive and an obligation to explore their possibilities. It is not necessarily anticipated that media packages will ever constitute the majority of educational experiences, but they are very likely to become much more generally useful and much more widely used than they have been. Most of their potential remains latent.

Obviously, care must be exercised not to allow enthusiasm to dominate good sense and runaway use of media is not to be desired. It is also true, however, that enthusiasm, properly placed, can influence in important ways what constitutes good sense. Concerted effort has led to many important developments whose prospective benefits were, at the outset, much more unclear that those of the application of media technology to University education.

Present Status

At the present time accurate information about campus media resources is not readily available. No central agency either coordinates or controls media services and equipment. The Media Center is the largest single agency for media activity and service, but almost every academic unit on campus possesses one or more pieces of media equipment -- ranging from tape recorders to complete closed-circuit video systems -- and this equipment is theoretically available to some 1,700 faculty members plus a substantial number of teaching assistants for a variety of uses.

The major functions associated with university media are:

1. Policy Setting and Revision

Policy is perhaps the most crucial function requiring major attention at this time. Planning, development, and the remaining functions listed below are being pursued in what amounts to a policy vacuum. The activities of the Media Center, no matter how excellent, may not produce a coherent media learning resources program without overall direction and guidance of a kind that can come only from systematic faculty and administration participation in policy development and revision, and the coherence and continuity provided by a fully authorized Director of Media Services and Development. Without such guidance, the Media Center management must endeavor to fulfill requests as best it can, while seeing opportunities for valid programmatic approaches go by without an adequate response by the University. At the same time, its relation to other University units is unclear and can change for reasons beyond its control. The Media Center and its management are consequently vulnerable to a variety of criticisms for which they may be without remedy. Criticisms such as "the Media Center is not aggressive enough in promoting valid applications of media resources to instruction"; "the Media Center has not embarked on an adequate program to train faculty in media use" or "UCLA is not properly postured to deal with the emerging opportunities provided by cable and satellite technology" are some of the consequences of the inadequate attention given to policy.

2. Instructional Design

Instructional design refers to the combination of content, structure, approach, personnel, and type of media for a presentation designed to achieve specific purposes or learning objectives. The Media Production Unit of the Teacher Education Laboratory of the Graduate School of Education has two part-time consultants to work with faculty in the design of media materials. Other media production and library units may offer this service, at least informally. Generally, attention to

instructional design on campus tends to be informal, unofficial, and implicit rather than explicity, and regarded as a distinctly secondary function.

Despite the paucity of professional help, the faculty is using media widely, particularly television. The Art Department, for example, has created a video laboratory primarily to explore the potential of TV for the arts and artists. Theater Arts uses television extensively as both an instrument and a subject of instruction.

The dominant instructional functions of television are either to increase the number of viewers of an instructional event (as with televised surgical operations) or to create a visual and aural record of an event for subsequent analysis or viewing. These functions are involved in the acquisition of data for ethnographic studies and community intercommunication (Anthropology); the recording of group interactions for demonstration, analysis, or therapy (Management, Sociology, Psychology); the recording of performances for rehearsal purposes (Dance) or for permanent records (Ethnomusicology); the interviewing of significant historical personalities (Oral History); the recording of moot court proceedings for analysis and evaluation (Law); timelapse analysis (Meteorology); the broadcasting and/or documentation of surgical procedures (Surgery, Dentistry, and other medical units); the recording of patient interviews and conference proceedings (NPI); the teaching of media librarianship (Graduate School of Library Service) and the development of video-learning modules (Education), among others.

A substantial number of departments that use television possess their own equipment and derive support for such use from the departmental budget. Accordingly, access to the hardware is limited to department members. Much of this equipment represents a considerable investment by the departments to meet their own needs, and if the trend continues mini-media-centers may multiply in various parts of the campus.

3. Evaluation

Evaluation is particularly important for media because materials are often designed and produced by groups remote from the users; because materials may represent a substantial investment and may be used repeatedly with large audiences; because awareness is growing that evaluation of education has been neglected and that quality is a crucial ingredient; and because lower budgets enforce increased attention to the cost-effectiveness of education. Evaluation may require its own specialists and testing facilities (preview facilities, audience feedback devices, etc.).

For the Media Center, evaluation has been informal. Indicators come from unsolicited comments and letters, inclusion of its productions in important collections, records of high use, and demands for follow-on projects. We know that the Media Center is capable of high-quality professional work by noting unsolicited statements about work it has produced, such as the following in response to a series of 15 films produced for The Social Seminar Series.

> Much praise must go to the UCLA Media Center and the directors who worked on the films for handling the material in such a sensitive and enlightened fashion. ...NIMH is continuing to explore new ways of presenting and using the Social Seminar Films to meet the demand for the material. (Office of Communications, NIMH, HEW).

> ...over the years we have found from eight to ten per cent of the films reviewed by us meet our criteria for excellence. We are pleased to advise you that not only did we recommend the Social Seminar as a package in our Selective Guide, but we also singled out several individual titles for special citation. (Executive Director, Mental Health Materials Center, Inc.)

Since faculty members who demand media services of any type are free to use off-campus suppliers, we can view the actual requests to the Media Center (particularly those for repeated service) as one general measure of the Center's supply capabilities in the marketplace. Individual instructors have their own evaluation approaches. The Department of Education is making some systematic attempts at evaluation, and there is growing literature on the evaluation of education in general and media in particular. If a major media project or program were to be undertaken with the prospect of having to commit large funds among alternative designs, a deliberate evaluation effort would certainly be warranted.

4. Production

Media here is most easily defined in terms of process or product type: still photography, graphics, realia, audio tapes, video tapes, motion pictures, publishing, computerized learning programs, simulation excercises. The Media Center produces all of these except computer assisted instruction programs and simulations. The latter have seen little use on the UCLA campus but they are being developed elsewhere and are now the basis for accredited courses at some major universities.

The Center's products range from a single slide costing under one dollar to a complete motion picture or television series costing $50,000 and more. Its staff includes producers, writers, directors, scenic and graphic artists, and a full complement of production personnel. Its current gross income is over one million dollars annually. It receives another $311,000 plus employee benefits from State subsidy. Staff salaries approximate $675,000.

The Center does not generally loan or rent its production equipment for use by faculty or students, but there are exceptions in the case of pre-purchase trial use.

5. Media Library

Media Library functions include the following:

Storage -- some media materials, e.g., film, require special storage, cleaning, and repair facilities to allow them a long, useful life.

Acquisitions

Consultation -- service to faculty on what materials are available within and outside of the University.

Preview facilities -- this may require a complement of presentation equipment with qualified operators.

Duplication -- the routine mechanical process of making copies from direct or broadcast sources.

Archive -- the services of cataloguing, search and retrieval, reproduction permissions, etc., for complete and piecemeal materials.

Distribution -- the physical distribution of films, tapes, other materials from storage to direct users and to electronic distribution centers.

The Media Center maintains an Instructional Media Library, which includes all of the above services. It has an inventory of approximately 2,000 films, of which 1,000 are now obsolete. It is starting to develop an inventory of video tapes and cassettes. It has no slide collection. Use averages about 225 rentals, 140 free loans, and 5 sales per month. Films are loaned free to departments for regularly scheduled classes and rented to Extension classes and outside education customers. The library keeps current catalogues of outside libraries and distributors. New materials are purchased on the basis of

projected demand estimates and money available. Last year just under $13,000 was spent for films. $1,136 was spent on joint purchase with academic departments which used the materials and then made them available for use by others.

There are at least eight additional collections of media materials on the campus, aside from those privately held by individual faculty members. Some indication of the extent of their services is given in the Directory of Learning Resources Support Programs.

6. Electronic Transmission

Electronic transmission capability consists of closed-circuit campus systems, and systems (cable/microwave/laser/broadcast) that can distribute signals beyond the campus. The Media Center's Engineering Division operates a campus closed-circuit television distribution network which includes 337 receiving locations, 40 of which are presently equipped with receivers. A few other small video networks exist on campus.

Off-campus transmission has been used for continuing education of the professions. In the last fiscal year eight hours of B. E. Witkin (representing three nights of lectures) and a four-hour program on "Legal Work Flow" (representing one Saturday morning lecture) were made available to attorneys and interested others through a closed-circuit television network system. Through another closed-circuit television system, a thirteen-hour urological symposium consisting of eight films on clinical procedures was broadcast for the medical profession.

UCLA holds an FCC license for mobile operation of a microwave system and a construction permit for Instructional Television Fixed Services. The license has just been renewed, but should be used before long to be retained.

7. Presentation

If the desired media services are to be presented, appropriate viewing and listening facilities, portable facilities for remote, flexible use, and equipment operators are required. The physical locations and administrative responsibilities for these are now widely dispersed. Learning Resources Centers using audio-visual materials of various kinds are now operating in the Graduate School of Education and the School of Engineering and Applied Science. Others are being installed by the Department of Linguistics, the Army ROTC program, and the Graduate School of Management, in connection with its Extended University Master of Business Administration Program. A language laboratory is being installed in the Humanities Division of the College of Letters and Science.

8. Facilities and Equipment Maintenance

The media chain involves many pieces of delicate, expensive equipment. Maintenance can make the critical difference between good and poor quality outputs, high and low operating costs, useful gear and useless junk. The Media Center has a maintenance staff which also services equipment held by other units. At present its facilities are not centralized, are too small and are poorly located. A piece of equipment may have to go to four different locations for parts and repairs. In an effort to remedy this condition, the Media Center requested space which would permit some collocation and provide adequate working areas. The result should be a reduction in maintenance costs and delays.

9. Planning and Development

These functions are made critical by several factors: the constant stream of new technology and equipment; attention to instructional strategies; changing attitudes towards the roles of the University which may demand new applications of media (and increase the chances for obsolescence and mismatching equipment); and the naturally long lead-times inherent in education. Each campus media activity is doubtless doing its own planning, but the Media Center has become the principal media planning and development agent on the campus and recently has put substantial effort into developing its own long-range plans.

The Center's management gives highest priority to interim enlargement of present facilities to take care of its most immediate needs. Next priority calls for a modern, flexible, closed-circuit, color television network throughout UCLA's medical facilities, and later, for the entire campus. Beyond this lie the development of a truly integrated media complex capable of efficiently meeting estimated demand, and longer-range, possibilities of video links among campuses and the use of satellite links for international communication. These plans are, for the most part, in the technical concept stage. This Committee has been briefed on the plans but on the basis of its study does not wish to make any firm, detailed judgments on their merit. At the same time, we believe that the scale of the plans is not excessive in light of the interest in and educational promise of media use.

The Center has taken the initiative of helping those involved in media on this campus to become aware of the high costs of failing to plan well. All proposed purchases of new media equipment are now checked by the Center for conformance to basic standards and for adequacy in meeting intended uses. Informal contacts between the Center's technical staff and users can be important as illustrated by these recent cases quoted from the Center's records:

On March 13, we provided color video cassette and monitoring equipment to Dr. Longmeyer for his use in presenting two Video Digest programs to one of his classes. He is interested in buying such gear. We recommended that for the near future he use ours instead. For one thing we are not sure today's standard cassette will be the type we would recommend for purchase a year from now. We feel all available funds such as his should be channeled into camera and cabling systems plus video recorders that can accommodate editing. (The video cassette is not capable of editing at this stage in its development.)

Mr. Richard Corlin recently arranged for a demonstration of a color television camera which is attached to the flexible fiber optic instruments used for gastroscopy, proctoscopy, etc. He is most anxious to purchase this or a similar camera, but agreed to await our recommendations as to the proper equipment to purchase.

The Bio-Medical Library has suggested that the library would be the logical location for study carrels equipped with video cassette playback units available to all students and faculty. They were in the process of requesting funds for the purchase of Sony video cassette units, but have agreed to await our recommendations.

Beyond this, the Center staff often works with faculty on the actual design of new installations. For example, working closely with the School of Medicine, the Center's technical staff has developed complete detailed plans and specifications for a closed-circuit television installation within the operating suite that will allow pathology, radiology, and operating surgeons to have the benefit of visual aids in correlating laboratory and clinical material during the course of an operation. This installation includes camera systems, receiver/monitor systems, control rooms, program rooms, production studios, and expandable distribution lines. The next step will be to provide transmission from the operating room to conference areas, for both instruction and consultation. This will all be designed for compatibility with the many future systems that will almost certainly be developed in the medical complex.

10. Marketing

Marketing may take many forms:

Selling or licensing the use of materials already produced.

Seeking support for media projects still in the idea stage.

Responding to requests from government, other schools, or outside commercial sources.

Stimulating interest within the University for media use.

The Media Center, through its Acting Director, is as active in all of these marketing activities as time allows. Grant proposals have been initiated for new projects. Faculty counsel and participation are sought in responding to requests from outside the campus. Some efforts to promote the sale of existing UCLA products have been made, and there have been attempts to stimulate interest in media use on the UCLA campus (one example is the Center's newsletter, "Media Matters.") However, adequate policies and arrangements covering these activities need to be developed.

11. Organization and Administration

The Media Center itself is administered by University Extension, although it is supported, in part, by regular University funds. At present, media related physical resources and administrative responsibilities are often divorced, and are distributed among a variety of organizational units: autonomous faculty members, research laboratories, departments, centers, and so on. Moves toward greater integration and some centralization are needed, but the precise range and preferable division of responsibilities, lines of authority, and organizational forms are not obvious to us at this point. Considerably more study will be required before firm recommendations can be made on the question of organization.

Reasons for Change

The previous section summarized campus media resources and functions as they exist today. The Committee believes those resources to be inadequate for the following reasons:

Media appear to have important potentials for producing more effective education and more productive research than at present for comparable cost; or, alternatively, of producing comparable results for substantially reduced cost. These benefits depend upon the scale of activity, among other things. We are below the needed scale.

There is demand, which cannot now be filled, for the media services now offered on campus, and this demand appears to be on the increase. There is evidence of growing interest which has not yet appeared as demand.

Present campus media practices appear inefficient in many respects. The costs of these inefficiencies will increase with increase in media use unless changes are made.

Opportunities exist now to determine the future role of this institution, and universities generally, in the fields of educational TV, cable services, copyright and use patterns of media materials, and other matters. But UCLA must be seen as an important force in the field if its influence is to carry weight.

UCLA is behind other comparable institutions -- a fact that could adversely affect its position regarding level of enrollment, quality of education, and cost per student.

Several distinguished study groups and commissions have concluded that institutions of higher education must become constructively involved in educational uses of audio-visual media. Appendix A gives the recommendations of the Carnegie Commission on Higher Education, as an example of the unequivocal tone of such conclusions.

In addition, there is substantial activity at the State government level which may result in legislation bearing upon instructional technology. The totality of these arguments, presented in more detail below, is persuasive that a positive change in University policy concerning media learning resources is due.

1. The Educational Potential of Media

Research in learning indicates that motivation and active involvement by students in the learning process is essential if goals are to be achieved. Motivation and involvement do seem to be a problem on this campus as on many others. Faculty might well start to reassess the extent to which they ought to focus

on instructional planning and design, selecting the best ways available to assist students in attaining desired competencies, possibly through the use of somewhat different instructional approaches. Numerous examples exist, and are mentioned elsewhere in this report, of media being used in motivating and involving ways, and with some imagination and encouragement more would be developed. Moreover, media can help UCLA reach out to persons and groups who are taxpayers, supporting the University, but who do not now count themselves amongst the University's constituency. Extension has long used media very effectively in this way, which may account in part for the vigor and perseverance with which it has promoted media applications. Early indications are that Extended University programs will utilize media heavily also.

a. Improved Instruction

Any consideration of the advisability of media use on this campus must be embedded in a more general concern with the overall problem of instructional planning. The teaching program at UCLA has developed under the precept of faculty autonomy. The faculty has assumed and used its freedom to devise courses which embody a rich diversity of concepts, orientations, and applications. The vitality of faculty response to its freedom is attested to by the number of new and experimental courses suggested each year as well as the modifications in content which regularly occur in existing courses.

The faculty has not always exhibited comparable vigor in exploring ways to present the material in courses, or otherwise to induce desired learning to occur. There is still great uniformity in approach to the instructional, as contrasted with content aspects of courses. To give attention to the manner or approach of instruction implies that the faculty member bears significant responsibility for promoting learning which goes beyond careful analysis and exposition of subject matter. The responsibility for learning has been treated as if it were almost altogether the students'. Those students have prospered who have learned how to learn in a classroom.

Lecture and other usual methods are especially suitable for certain courses, students, and faculty members. Yet, the increasing availability of media should permit and encourage teachers to investigate other modes of instruction. The timeliness for such exploration can be assessed in terms of

our student population, economics, availability of enabling technology, and competitive pressure. Our students will increasingly come to us from an environment rich in instructional variety. Media are regularly employed in our secondary schools. Further, the out-of-school milieu is increasingly sophisticated. Devices for computing, recording, replaying, and duplicating visual and aural material are common in many sectors of society. Students are increasingly interested and literate in media and technology. The University, if it is not to appear -- and become -- archaic, must demonstrate its willingness to explore and employ such new tools where they are appropriate in its work.

Educators now know that there is not necessarily a "best" way to teach something to everybody. Hence, it seems desirable to provide learning options and gap-fillers -- alternative ways to learn, or to learn what has not otherwise been learned. For this purpose, media have obvious advantages. Certainly, different students will require different amounts and kinds of exposure or review, and some will benefit more from materials of one kind, some from another. Media add another dimension to the already existing dimension of books in making the process of exposure and review at least partly independent of class schedules, the availability of human instructors, and other constraints on the learner. The student's autonomy should be responded to where it already exists, and encouraged where it is insufficiently developed, via appropriate use of media.

An important characteristic of audio-visual media, such as films and TV, is the ability to cause faculty members to think differently about what they are doing. A great deal of this has already gone on at UCLA. If we regard the finding of good and effective ways of producing learning as part of the faculty member's "problem," the range of solutions which he actively considers is naturally a factor in the solution arrived at. Audio-visual media are still regarded by most teachers as a remote, rather than an immediate, possibility. As a result, the advantages they offer tend not to be well explored as yet. But when it is easy, and common, for them to be used, faculty members may find excitement in working at their tasks in new ways, leading to innovative solutions to the problems of instructional design. This has occurred in the Open University and in other places employing media extensively, as well as here on a limited scale. In addition, the process of working with media technologists and others leads to the introduction

of new ideas from that source, and the total process of instructional design may be enriched. Hence, the motivational value of the media on the faculty, as well as on the students, provides an incentive to the university to invest more systematically in development and use.

b. Economy

The economic potential of media for university education will be reviewed only briefly: Repeated use can lead to diminished unit cost, assuming adequate scale. Scheduling flexibility that can accompany media use can lead to more effective use of the University's resources, including faculty time. Review and study by students using media materials can also lead to improvements in use of faculty time. The improved quality of instruction discussed in (a) above, and improved student response can lead to a greater appreciation of the University by its constituency, and greater willingness by that constituency to provide the needed financial support. Increasing the potential student body can lead in the same direction. Packaging the university's services, and transforming them into products through use of media can lead to new sources of income. Cooperative arrangements with other institutions can lead to cost-sharing, since not all universities need duplicate the production of every kind of material, and agreements can lead to considerable efficiency and quality enhancement. The existence of commercial interests in the field of higher education poses an economic, as well as an educational challenge to the University to which it must, one way or another, respond. Finally, economic pressures on the University virtually compel it to seek alternative approaches to performing its social role. Moreover, when it does so, it will undoubtedly encounter opportunities for improved and more economical operation.

Decisions about particular investments cannot, of course, be derived from these generalities. The Recommendations at the head of this report describe arrangements which can help generate the needed policies, programs and decisions.

c. Obstacles to Media Use

If the usefulness of instructional planning and media implementation are accepted, what forces exist to retard acceptance of new forms of instruction? Of central concern is the pressure of tradition against which new forms of

instruction must be compared. The book as a technological advance over the scroll provides a relevant analogy. The book form had advantages of endurance and convenience over the parchment scroll; yet books did not grow in acceptance during the Roman Empire, partly because of traditional expectations that works of merit and importance were to be in scroll form. Books grew in popularity after they established themselves in a cultural context other than Roman. Following the transition to Christianity, books became acceptable in Rome as well. While the Roman Empire is perhaps an unduly ominous analogy for the University system, it is true that the usual procedures of scheduling, enrollment, facilities use, and teaching credit combine to reinforce the traditional classroom approach. Any contemplated change in instructional programs must take account of the control exercised by familiarity and routine. For this reason, it may be important for faculty members and administrators to attempt to view the University in the historical retrospect of 50 or 100 years from now in making their judgments.

But there are more concrete obstacles, of which two deserve special mention. The first is the apparent cost of a program to develop adequate media capability and involvement. The dollar figures can run into millions, and in a time of cutbacks and economies, expenditures at such scale appear hard to defend. The second is the incipient fear that some faculty members may feel about the prospect of displacement from their present function. These are not easy issues to resolve. Both merit work and dialogue.

On the first we believe much of the money is properly viewed as an investment which, if wisely managed, should be able to pay for itself in a few years, and subsequently produce a substantial return. The residual is a cost of doing educational business and maintaining quality in this era.

On the second, effective use of media should be an element in instructional planning and practice which can provide opportunities for creativity in itself, and release instructors for more scholarship and less stereotyped teaching activities. There is no shortage of educational and research work to be done.

We would expect that increased use of media might require more, rather than less, faculty time in many cases, and that

in the remainder, the time made available could be advantageously used in further instructional planning and design research, or in personal contact with students. However, policies should be thought about now to see that there will be no adverse personnel effects under any circumstances. So far, institutions where media are used extensively have managed well, in general, to avoid adverse personnel impacts.

2. The Growing and Unfulfilled Demand for Media

The Media Center "Overview" for 1971-72 reported that the Center's workload more than tripled during this period. In 1971-72 the Center's Television Division produced about 250 hours of video programming, servicing 416 requests from sixty-eight UCLA departments. About one-third of the requests came from medicine and related groups. The Still Photography Division produced about 200,000 slides in answer to more than 5,000 requests from 55 departments. The Center's present workload and the demands left unfulfilled show this trend is continuing. This Committee conducted a telephone survey of 74 departments, research units, and centers. All said they use some media; all but one said they expected to use more in the future. There are indications that demand by the social sciences, though now low, is beginning to rise.

Probably the most urgent and clearly articulated demands are those from UCLA's largest media user, the School of Medicine. The Dean of the Medical School has appointed a Committee for the Development of Television Facilities in the Medical School-Hospital Complex, which has been surveying current media installations and their uses and making proposals for new uses and installations. The survey is still far from complete, but excerpts from a few of the responses show the tip of the iceberg:

> ...several forms of television instruction are currently utilized in the Department of Ophthalmology and the Jules Stein Eye Institute...we intend to make a steadily greater use of video cassette material for education at all levels. Video cassettes will probably include material prepared elsewhere as well as material recorded in our own operating rooms and clinics.
>
> ...we must ask in Dermatology...will it be in color? Black and white is essentially useless for Dermatology presentations.
>
> If it is in color, I would like to suggest small recorder cameras to allow taping of patients at CHS, HGH, Wadsworth and Sepulveda V.A.'s for "in absentia" presentation at conferences throughout the system with establishment of permanent tape libraries...

> ...I at the present time am using a borrowed Ampex audio-visual system from Anesthesia Department. However, I am contemplating in the future acquiring a cassette type audio-visual recorder if I can find the funds.
>
> ...the Division of Rheumatology of the Department of Medicine has been engaged in building a library for teaching purposes utilizing synchronized slide-sound programs. The limitation of this approach to dynamic areas such as the teaching of physical examination or procedures is obviously very great and a color video tape system which could be used for closed-circuit television, as well as a tape library, would be a most welcome addition.
>
> ...a color television monitor should probably be at the Rehabilitation Center, as many members of both the Departments of Medicine and Surgery are situated here and it is the major site for teaching conferences in the Division of Rheumatology.
>
> The Gastrointestinal Endoscopy Unit has been exploring the adaptability of a color closed-circuit television system...

One task of that committee is to determine priorities. It has given top priority to installing closed circuit color television within the operating suite so that pathology, radiology, and operating surgeons may have the benefit of visual aids in correlating laboratory and clinical material during the course of an operation. The next step will be improving television transmission from the operating room to conference areas, for both instruction and consultation. These items are included in the Media Center's projections.

It is interesting to note that of the eighty-seven project proposals submitted by UC campuses to the Innovative Projects Committee for the Regents' grant in April 1973, the overwhelming majority involved the use of media. An even greater proportion do so in 1974. Many conditions, such as those suggested below, stimulate this demand even further. Some can be controlled or enhanced by UCLA actions; others can be neither controlled nor predicted.

> Budget pressures. The prospect of new cuts and continued stringencies in higher education support, in combination with the media possibilities for holding down per-student costs.

Increased media use by other educational institutions. The success of various higher education pilot centers and programs in using particular media or broad coordinated instructional media programs.

Expanding role of universities. Greater involvement of the University in the community through tutorial programs, community services, intern assignments; the University as a community knowledge and information center; the whole concept of the broadcast university.

Changing educational strategies within UCLA. Interdisciplinary programs and courses, the instructional module approach, programmed instruction, learning centers, etc.

Changing technology. Lower costs of media tools, as with video recording in contrast to film; increased opportunities for new applications (as in the medical applications already noted); expansion of current capability which offers opportunities ranging from international video conference links by satellite to such future possibilities as televised transmission of holography.

Increased use of media at pre-college levels. Increased use of media at all levels, most dramatically in pre- and primary school, but also up through secondary school, possibly leading to modified habits and expectations on the part of students entering college.

Deliberate measures to increase faculty media use. Development of instructional workshops for the production and use of media, media experimental laboratories, incorporation of media into extramurally funded programs.

Student accessibility and use. The growing trend to make media equipment available to students and to accept their productions in fulfillment of academic requirements in a growing number of disciplines ranging from natural and social sciences to humanities and the professions, e.g., anthropology, linguistics, theater arts, architecture, education.

Outside demand for media presentations. The increasing number of requests for University faculty to take an active part in outside media programs, stimulated by such trends as the perceived need to fill the gap between layman and scholar; the growing awareness of critical issues such as the environment, the energy crisis, etc., and the requests for help from the academic community; the efforts of news and public broadcasting; the new appetite for media presentation

by the cable television industry.

The Committee is aware that many factors can work to offset the increased demand for media. Some of these are listed below:

High initial costs or lack of appropriate funding arrangements (though the cost per student or student hour may ultimately be very low).

Lack of experience and general unfamiliarity among faculty with production techniques, user hardware, etc.

Inconvenience due to classroom design and administrative procedures based on traditional practices.

An inadequate supply of shelf materials to meet demand.

Poor quality of many media programs.

Equivocal evaluations that do not prove a strong case for or against media in many applications.

Lack of adequate production facilities so that requests for services cannot be accommodated.

The support of tradition for the lecture approach and the concern of faculty members with the threat of displacement by media.

Inadequate scale of planning to reap the available benefits.

While, as previously stated, some conditions of increased demand can be neither controlled nor predicted, means are at hand to help counteract each of the inhibiting factors listed above.

3. The Present Inefficiency of Campus Media Activities

Under the tradition of academic autonomy, there has been little coordination and advanced planning in the production and use of media on campus, among UC campuses, or within the education establishment generally.

The UCLA Media Center, itself, the largest media agency on campus, is not the result of an integrated, academically based plan, but of some valiant but unsystematic efforts made over the years to satisfy immediate demands. Thus, it has suffered from inefficiencies which it is now seeking to remedy.

The continued lack of coordination and adequate planning beyond the Media Center is serious for the following reasons:

> Some of the greatest advantages of media depend on coordinated use and development: the ability to reach out to large, remote audiences, to break through disciplinary barriers, to be available on demand, to achieve low cost per student, to draw on already developed skills, etc.
>
> The present uncoordinated use patterns tend to produce grave inefficiencies: disappointing performance because purchasers lack the expertise to evaluate equipment; incompatible equipment, preventing interchangeable media products and modular use in larger systems; high rates of obsolescence; duplication and low use rates of expensive equipment; poor maintenance; and others.

These problems will be greatly multiplied with the increase in demand for more advanced and expensive equipment unless careful planning and coordination occur.

4. Context

In almost every field of media use, UCLA is behind some other comparable institution. Yet, with reasonable determination, it could become preeminent by building on its sound base of academic excellence and the start already made. In medicine, the staff is well aware of the advantages others have in the use of closed-circuit color television networks; they are aware of the immediate prospects of satellite television links for clinical use, instruction, and research. This excerpt from a recent memorandum of a medical staff member is an example:

> I would like to record once more my very positive impressions of the use of this tool (television) when I visited the neurosurgical operating room suite at Mount Sinai Hospital in New York...The great usefulness of a screen within the operating room itself which can be watched by the scrub nurse and by means of which she can see far better what the surgeon is doing than by looking down towards the operative field...The television screen located in the surgeon's office served as an effective way of demonstrating the pathology to a number of physicians who might otherwise have come to the operating room where they actually would have seen less of the procedure...The televised procedure was taped on video tape and I think this is an excellent way of teaching our house staff, especially useful since we have men scattered at various hospitals.

UCLA is behind in other areas as well. The extensive group and individual media programs of the Open College Consortium have been widely cited for their student attraction, their faculty participation, their educational effectiveness, and their lower costs over traditional methods.

The use of off-campus courses sent by television from campus to remote plants and offices seems to be a growing trend. Stanford and the University of New Mexico, among others, have been doing this for some time; USC and Florida State are reportedly developing this capability. UCLA transmitted a course to employees of Hughes Aircraft Co. on site at one time, but has not done so recently.

The development and use of Computer Assisted Instruction (CAI) continues to develop at a number of schools; Darmouth College, Stanford University, and Rensselaer Polytechnic Institute have CAI programs for anthropology, astronomy, chemistry, education, logic, French, Russian, statistics, and many other subjects. The University of Illinois is reported to have designed programs for more than 1,000 accredited, college-level hours. That university has received contracts to develop a CAI approach for education of the volunteer army-navy-air force. Business is also active in CAI. Most of these CAI programs were developed under government funding and are apparently available for use here if we should want them.

Competition is starting to become serious. The appetite for materials that is being created by cable and satellite distribution systems is an incentive to some institutions whose lead can thereby be consolidated and increased. Furthermore, educational institutions generally are in some danger of being thrust collectively into increasing eclipse in some areas by commercial and other producers of learning methods and materials. The trend is still young, and of course debatable, but the producers of documentary films, the operators of "learning centers," the distributors of cassettes, the members of educational consortia which are syndicating courses for credit, and the foreign sources, such as the Open University (whose very high quality materials are available in the U. S. through Harper and Row) and the BBC, can all be considered as laying claim to some portion of what the University has been doing heretofore, and with increasing excellence.

5. Activity at the State Level

Future legislation may be expected to reflect the content of reports by recent major study commissions. Reports which touch upon learning resources (or instructional technology) include To Improve Learning (1970), Report on Higher Education (Newman Commission report) (1971), and a forthcoming Newman Commission report on instructional technology. The first

Newman Report includes statements which allow some anticipation of the coming report on instructional technology:

> Many approaches based on new technologies have seemed to come to fruition slowly after first being oversold as revolutionizers of the classroom. Television, after a long and difficult start, is now an educational media overdue for serious use. Breakthroughs, such inexpensive tape and playback equipment, regular use of satellites, and growing use of cable television, permit new flexibility. The recent successes of TV...have overcome much of the inertia and prejudice stalling its use.
>
> (Newman, et al, 1970, p.70)

Another indication of these future recommendations is found in this statement:

> Over the past twenty years an enormous amount of money has been spent on video education. Over and over again, it has been shown to be educationally effective. Yet it is only used modestly in higher education, and is still generally regarded with a high degree of suspicion. We therefore propose a major initiative, the development of a small number of video production centers, each assigned a specific educational mission...we are interested here in developing entire educational delivery systems rather than discrete production of single tapes and films from the educators who are to use such program materials.
>
> (Newman, 1972, p.34)

The fact that various schemes have been proposed along these lines over the years should not allow us to dismiss more current recommendations as unimportant. There is reason to believe that these are notions whose time has come.

The Coordinating Council for Higher Education acts to coordinate the three segments of public higher education in California, under authority delegated by the Master Plan for California Higher Education adopted in 1960. The CCHE appointed a Select Committee to assist in the current review of the Master Plan; the Select Committee's recommendations include the establishment of various consortia, including a Television Division to

> develop production of academic instructional films and tapes, develop contracts and procedures for utilizing commercial television facilities and broadcasting in the instructional process, and coordinate the offerings of televised and correspondence instruction for appropriate academic credit by member institutions.

The status of this recommendation will remain unclear until the California Legislature adopts a formal revision of the Master Plan, such as it is currently developing (Vasconcellos, et al, 1973). This revision may be expected to bear upon learning resources in several ways, including the replacement of the CCHE with a State Postsecondary Education Commission as a regulatory agency. This agency would promote increased coordination in California Higher Education and administer a continuing fund for the support of innovations in postsecondary education. (This fund would involve one to three per cent of the University's operating resources.) The Legislature's draft revision of the Master Plan also includes several proposals for "increasing educational productivity and cost-effectiveness," including the following: (Recommendation 51.f)

> ...greater use of technology, particularly tapes, television, and other media which are conducive to student self-paced learning and educational flexibility.
>
> (Vasconcellos, et al.,1973,p.106)

The Legislature is also considering a variety of bills which could affect the development of the Media Center and University media activities generally. For example, a proposal has been made to establish a California Telecommunications Authority (Quimby, 1973), which would serve to "assist, and support in the fullest, appropriate utilization of telecommunications technology for service to the people of California and all administrative and legislative agencies of State government." This authority, if it becomes a reality, will include representation from the University of California. In another current action, an Assembly Concurrent Resolution has been proposed (Quimby and Moretti, 1973) to create a Joint Committee on Telecommunications Systems, "to investigate all aspects of telecommunications and to develop such policies as may be required to maximize the use of telecommunications in the public interest." The "whereases" of this resolution include the observation that

> Several successful programs outside of California have clearly demonstrated that the open university concept using telecommunications as a primary mode of instruction are educationally sound and cost effective.
>
> (Quimby and Moretti, 1973, p.2)

This brief summary cannot provide a complete picture of State government activity which bears upon the Media Center, but is provided as an indication of current thinking.

A Conceptual Basis for Planning

As far as the Committee is concerned, the evidence is convincing that media can enrich the educational process and that growing relization of that fact is generating an increasing demand and a competitive field for which the University must plan. The positions that the Committee takes about use and development of media resources, however, derive from some beliefs about the University as an educational entity. In planning for the future, we must distinguish between what the University now does and what it may do; between the kind of student it now serves and the kind it may come to serve; and between media as they have been used so far and as they may be used. Some people ask how media as presently understood can assist the University as it is now operating to help students on campus. Some are interested in serving the present purposes of the University by using media in new ways. Some would like to explore how new constituencies can be served. Others think that media use may lead to new kinds of University activities and structures. Some, in contrast, wonder whether media use is related, necessarily, to any aspect of University educational activities at all. These and other concerns were considered by the Committee. They deserve attention by faculty, students, administration, and those who provide support to the University. The variety of concerns probably derives from at least five different ways in which UCLA may be viewed. Each has different implications for approaches to media use.

1. The University may be viewed as a set of constituent departments, schools, and institutes or centers. Each of these has its own raison d'etre and each has established its own identifiable role. The departments, schools, and institutes or centers, among them, do the things that the world regards as the University's output. The members of each are in the best position to decide what should be done in their own field. In this view, what the University should do with, or about, media is what the members of each constituent part are doing and want to do about it. The administration should seek possible arrangements to support each unit selectively. The faculty, possibly with student input, should be depended upon to initiate programs or projects for the application of media learning resources in the respective fields. The Media Center, or some other entity or entities, should be charged with serving, helping, and continuing to search for means to do so better. This limited view minimizes the role of planning, and suggests a more or less reactive posture for the Media Center, and considerable autonomy for other media units.

2. The University may be viewed alternatively as a community of communities. It is first a community of disciplines.

The representatives of these disciplines serve a second community, the community of students. A third community is the faculty who teach. A fourth, which overlaps the preceding one in membership, but may be very different in interests and approach, is the community of researchers. There are others including administrators and staff personnel who support the "direct" activities. This view of the University suggests that the future use of media should result from dialogue within and among these communities and from joint planning for new directions and programs, including the use of media and/or consultation by a media specialist for satisfying the needs of the various communities. In the process, plans and ideas might emerge that would not necessarily have arisen from individual units or faculty members operating independently. Moreover, pooling of interests may lead to greater impact than individual initiative can.

3. A third view of the University is as an institutionalization of the public interest in the generation, organization, dissemination, and application of advanced knowledge, competence, and learning resources. Here, the role of media in support of learning processes must be regarded as it relates to the public interest, including consideration of the educational needs of inadequately served constituencies, as well as of those already well served by the University. The result might be a shift of some attention from the main body of the University as we now know it towards Extension, Extended University, or other arrangements that would help the University reach people on a somewhat different basis. It also might lead to research to determine how media can be used constructively to meet more of the postsecondary educational needs of the community, the State, the nation, and perhaps the world, and the discerning of appropriate, possibly modified, roles for the University in the process. A cooperative or coalitional role with other institutions and the more active involvement in education of media specialists might emerge; the collective posture of educational institutions on such matters as the use of cable television or satellite communications becomes an issue.

4. The University may also be viewed as one among many sources of knowledge, competence, and learning resources. While it has been one of the favored few suppliers (an institutional near-monopoly, as it were) in the past, it is now to some extent an embattled supplier in a market characterized by changing demand, new sources of competition, and new pricing and distribution structures for the commodities and services in which it deals. In this view, the situation calls for a University-wide appreciation of what is happening; the generation of a continuing mechanism for

reviewing and, if necessary, revising UCLA's approach to use of media learning resources in light of its roles and missions; and policy studies of the impact on the University of the new forces and developments. Among these, the appearance on the market of a rapidly growing supply of audio-visual media packages, plus television and other distribution systems for them, presents a threat to the University past posture as well as an opportunity to achieve some of its traditional aims in new and possibly better ways, and make realistic the formulation of some new goals. Coping with both threats and opportunities requires a kind of planning which does not appear to exist on the campus at this time.

5. Finally, UCLA may be seen as a member of the University of California system, a system of nine campuses having related interests. From this point of view, decisions about media resources for educational purposes should involve coordination with the other campuses and possibly with the California State University system. This view also suggests the possibility of an intercampus network, with each campus serving the needs of its locale or region, as well as those of its own enrolled students.

It is well to keep in mind the disparity as well as commonality of approaches that derive from these related, but different, views of the University. Each is correct in its way. Only when taken together, however, do they constitute an adequate conceptual basis for determining how the University should proceed to develop and deal with media technology and its applications in this era of expanding media resources coupled with changing needs and expectations in the populace. The accelerating accumulation of knowledge in all fields makes it imperative that the most effective methods of education be employed if further estrangement of the university from its embedding society is to be avoided.

Part of the University's business is exploring what education means and can mean. We ask students not only to learn, but to continue to learn how to learn. They have a right to ask the university not only to educate, but to continue to learn how to educate. Under these circumstances, it is irresponsible to ignore the potentials which media offer.

APPENDICES

APPENDIX A

Recommendations by the Carnegie Commission on Higher Education (The Fourth Revolution: Instructional Technology in Higher Education, McGraw-Hill, NJ, June 1972)

Recommendation 1: Because expanding technology will extend higher learning to large numbers of people who have been unable to take advantage of it in the past, because it will provide instruction in forms that will be more effective than conventional instruction for some learners in some subjects, because it will be more effective for all learners and many teachers under many circumstances, and because it will significantly reduce costs of higher education in the long run, its early advancement should be encouraged by the adequate commitment of colleges and universities to its utilization and development and by adequate support from governmental and other agencies concerned with the advancement of higher learning.

Recommendation 2: Since a grossly inadequate supply of good quality instructional materials now exists, a major thrust of financial support and effort on behalf of instructional technology for the next decade should be toward the development and utilization of outstanding instructional programs and materials. The academic disciplines should follow the examples of physics and mathematics in playing a significant role in such efforts.

Recommendation 3: Institutions of higher education should contribute to the advancement of instructional technology not only by giving favorable consideration to expanding its use, whenever such use is appropriate, but also by placing responsibility for its introduction and utilization at the highest possible level of academic administration.

Recommendation 4: The introduction of new technologies to help libraries continue to improve their services to increasing numbers of users should be given first priority in the efforts of colleges and universities, government agencies, and other agencies seeking to achieve more rapid progress in the development of instructional technology.

Recommendation 5: We recommend that major funding sources, including states, the federal government, and foundations, recognize not only the potential of new and developing extramural education systems for expanding learning opportunities, but also the crucial role such systems should play in the ultimate development of instructional technologies. Requests of these systems for funds with which to introduce and use new instructional programs, materials, and media should be given favorable consideration.

Recommendation 6: By 1992, at least seven cooperative learning-technology centers, voluntarily organized on a regional basis by participating higher educational institutions and systems should be established for the purpose of sharing costs and facilities for the accelerated development and utilization of instructional technology in higher education.

Recommendation 7: The federal government should assume full financial responsibility for the capital expenditures required initially to establish one cooperative learning-technology center every three years between 1973 and 1992.

Recommendation 8: The federal government should provide at least one-third of the funds required for the operation of cooperative learning-technology centers for the first ten years of their operation.

Recommendation 9: The federal government should continue to provide a major share of expenditures required for research and development in instructional technology and for introduction of new technologies more extensively into higher education at least until the end of the century. The total level of federal government support for these purposes should be at least $100 million in 1973 and should rise to 1 percent of the total expenditures of the nation on higher-education by 1980.

Recommendation 10: The proposed National Foundation for Postsecondary Education and the proposed National Institute of Education should be established, and the proposed National Foundation for Postsecondary Education should be assigned responsibility for administering loans and the provision of capital investment funds and grants for the utilization of instructional technology. Grants to support research and development activities in the field of instructional technology for higher education should be made by the proposed National Institute of Education.

Recommendation 11: Colleges and universities should provide incentives to faculty members who contribute to the advancement of instructional technology. Released time for the development of instructional materials and promotions and salary improvement for successful achievement in such endeavors should be part of that encouragement.

Recommendation 12: Colleges and universities that are responsible for the training of prospective university, college, and high school teachers should begin now to incorporate in their curricula instruction on the development of teaching-learning segments that appropriately utilize the expanding technologies of instruction.

Recommendation 13: Colleges and universities should supplement their instructional staffs with qualified technologists and specialists to assist instructors in the design, planning, and evaluation of teaching-learning units that can be used with the expanding instructional technologies. Institutions of higher education at all levels should develop their potentials for training specialists and professionals needed to perform the new functions that are associated with the increasing utilization of instructional technology on the nation's college and university campuses.

Recommendation 14: High schools that do not already do so should offer instruction in basic concepts and uses of computers and should encourage their students to obtain, as early as possible, other skills that will be helpful in the use of new media for learning.

Recommendation 15: An independent commission, supported either by an appropriate agency of the United States Department of Health, Education and Welfare or by one or more private foundations should be created to make assessments of the instructional effectiveness and cost benefits of currently available instructional technology. Findings of the commission should be published and appropriately disseminated for the advice of institutions of higher education, such cooperative learning-technology centers as may be established, and governments and foundations supporting the advancement of instructional technology.

The Carnegie Commission suggests that the following goals be reached by 1980:

1. Institutions of higher learning will have accepted a broad definition of instructional technology such as: The enrichment and improvement of the conditions in which human beings learn and teach achieved through the creative and systematic organization of resources, physical arrangements, media, and methods.

2. Most colleges and universities will have devised adequate administrative and academic authority and procedures for the encouragement and appropriate utilization of instructional technology.

3. Colleges and universities who are responsible for training prospective teachers for high schools and colleges will have incorporated instruction in the design of courses and in the effective utilization of instructional technology (as broadly defined in this report) in their curricula.

4. A concerted federal government effort, utilizing the resources of the nation's finest libraries and museums as well as the resources of the nation's campuses, will have been made to design and produce courses of instruction of good quality for presentation using advanced electronic media.

5. At least three cooperative learning-technology centers, combining the instructional technology capabilities of many member institutions within a geographic region, and originating and directing centralized instructional services through information, communications, and computing networks will be in operation.

6. The level of federal support for development and application of instructional technologies should have reached a figure equal to 1 percent of the total national expenditure for higher education.

7. Extramural higher education programs should be available to most Americans through Open University type programs initiated by existing colleges and universities, states, or cooperative learning-technology centers.

8. Legal restraints upon the duplication of educational materials should have been thoroughly reviewed by Congress with special attention given to their impacts on the capabilities and advantages of instruction provided by the new instructional technology.

9. Manufacturers of equipment for uses in teaching and learning at colleges and universities will have made a greater effort to adapt their designs so that compatible instructional components can be produced for use on a wide variety of makes and models.

10. Systems for identifying promising instructional materials will have been developed, and procedures for encouraging their development and utilization will be operable.

11. New professions for persons engaged in creating and developing instructional materials on the nation's campuses will have emerged.

By 1990:

1. Most colleges in the country will have introduced sufficient technologies of all available and appropriate kinds to realize the following benefits:

   (a) Savings of some of the time professors and senior instructors traditionally spend in personally presenting information that could as easily be presented by other means. A reasonable goal is average savings of at least 15 percent of a professor's time per course.

(b) Provision of alternative modes of instruction for existing courses. There is no longer any reason to insist that students learn everything in the same way. Some students learn some things best from the lecture mode. Others learn certain things best by reading or with maximum use of visual materials. Particularly in fact-intensive courses, or review courses that are prerequisites for advanced instruction, students should have as wide a variety of learning modes available as possible.

(c) Provision of logistical flexibility by allowing students to receive certain amounts of their instruction at times and places that are most convenient to them.

2. Six of the seven proposed cooperative learning-technology centers recommended in Section 6 will be in operation.

By 2000:

1. All instructional technology identifiable in 1972 will be in general use on college and university campuses.

2. The availability of education through independent study within and without traditional institutions will have become widespread through applications of the expanding technology.

APPENDIX B
UCLA MEDIA RESOURCES AND ACTIVITIES

The Committee explored the extent to which media are presently being utilized in instruction on the UCLA campus. Media, for this purpose, were defined as television, film, audio, illustration-graphics, and realia. The extent to which media products are archived on campus was also investigated.

The information contained in Tables 1 through 6 below came from four documents: the Overview of Media Activity prepared by the Media Center, the University of California Directory of Learning Resources Support Programs prepared by Tom Karwin, a Compendium of Video Activity on the UCLA Campus prepared by Bob Jacobson, and the questionnaires returned in the survey of visual communication activity conducted by Michael Moerman in the spring of 1972. From these sources it is possible to determine (a) who has used media; (b) the uses to which media were put; (c) whether uses were presentational or participational, or both; (d) what equipment was involved; (e) whether access to equipment was open or restricted; (f) the source of financial support; and (g) whether media products were archived. In addition, a telephone survey of seventy-four academic departments, centers, and research units was conducted by staff assistant William B. Lee. The survey attempted to:

--secure an accurate figure of the total number of units using media;

--estimate the projected level of future use; and

--determine what obstacles, if any, have been encountered in efforts to use media in instruction.

Finally, the Inventorial Equipment Annual Class/Type Register as of June 30, 1972, was examined in order to determine how much media equipment is present on the UCLA campus.

The data which follow should be considered to be only a fraction of the whole. In our judgment, the only way to secure a true measure of UCLA media usage would be to design a careful survey and administer it annually to all academic units, with all faculty members in each unit being called on to contribute data.

1. Television

Because of its increasing popularity, its versatility as an instructional tool, its relatively low cost, and the extraordinary advances that are imminent in its technology, television will likely dominate future media activity at UCLA.

Preliminary analysis of the Inventorial Equipment Annual indicates that 288 black and white receivers or monitors are already in use among forty-eight departments or centers, together with forty-two color receivers in fourteen departments. Additionally, the Inventorial Annual lists twenty-five closed-circuit television systems in twelve departments.

Television is being used in many ways. Table 1, although incomplete, provides an index of the users and uses of television as an instructional tool.

2. Film

Data from the sources already cited and responses from film service agencies on campus show that motion pictures are also widely used in instruction and research at UCLA. Table 2 identifies some thirty-three users of motion picture photography, but the Inventorial Annual reflects a higher level of activity. As of June 30, 1972, there were some 294 motion picture cameras and 441 motion picture projectors listed on the inventories of some fifty departments. The fact that twenty departments maintain their own film-editing equipment also indicates the scope of film usage.

As Table 2 indicates, film is used primarily for teaching, training, and visual documentation. The extent of these uses may be estimated from the level of service provided by the Campus Activities Services Office and the Instructional Media Library. Each academic quarter, CASO fills about 200 orders for film presentations. During the three-month period from January 1, 1973, to April 6, 1973, the Instructional Media Library filled over a thousand (1,012) film orders. These, of course, represent only general campus services, and an accurate estimate of film usage would have to include the activity in those departments which have an independent capacity for generating and/or displaying film products, as well as film orders placed with off-campus film libraries or suppliers. These figures are not now compiled.

3. Illustration-Graphics and Still Photos

The production and/or presentation of slides, prints, or illustrations for instructional purposes involves at least the thirty-five departments listed in Table 3, below. However, again the data from the Inventorial Annual suggest greater usage than the Committee has been able to document. According to the Annual, there were 1,209 still cameras and 995 still projectors on the UCLA campus as of June 30, 1972. (It was impractical to attempt a hand count of departmental codes

for this many listings and there was insufficient time to acquire a computer analysis.)

VIDEO

TABLE I

USER/PRODUCERS	USES	PRE/PART		HARDWARE	ACCESS	SUPPORT
Professional Schools						
Architecture & Urban Pln.	Research/Documentation	X	X	1/2" VTR	limited	
Education	Research - Video Learning	X	X		limited	Departmental
Engineering Systems	Documentation	X		VTR	limited	Departmental
Law, Clinical Program	Moot court proceedings	X	X	1/2" VTR	limited	Departmental
Library Services	Media librianship	X		1/2" VTRS	limited	Departmental
Management (GSM)	Research - group interaction	X	X	1" Bell& Howell	limited	Departmental
Social Welfare	Taped lectures	X	X	none		Departmental + Grants
Vocational Education	Field Documentation & Feedback	X		1/2" & 1" VTRs	limited	Departmental
Health Sciences						
Anatomy	Instruction & experimentation	X		CCTV only	limited	Departmental
Dental Media Unit	Documentation & instruction	X		CCTV & VTR	limited	Departmental
Neurosurgery	patient observation & microscopy	X		1/2" Concord	limited	Departmental
Pediatrics	patient observation & research	X		several VTR's	limited	Departmental
Physiology	Teaching & Documentation	X	X	CCTV + VTR'S	limited	Departmental
Radiology	Endoscopy/Radioscopy	X		CCTV + VTR'S	limited	Departmental + Grants
Surgery	Documentation & Teaching	X		CCTV + VTR's	limited	Departmental + Grants
Letters and Sciences						
Anthropology	Training for field research	X	X		limited	Departmental
Cyclotron Laboratory	monitoring "hot" operations	X			limited	Departmenta.
Economics	Taped Lectures	X		3/4" Sony VTR	limited	Departmental
Kinesiology	video feedback	X	X	1/2" VTR's	limited	Departmental
Meteorology	Time Lapse Analysis	X		1/2" VTR	limited	Departmental
Oral History Program	interviews of historical persons	X		none	limited	Departmental
Political Science	limited experimental use	X		none	limited	Departmental
Psychology (Fsrndale)	Documentation, Video Therapy	X	X	1" & 1/2" VTRS	limited	Departmental + Grants
Sociology	Classroom interaction/role playing	X	X	none		Departmental + Grants
Speech	Video feedback	X	X	1/2" VTR	limited	Departmental
Fine Arts						
Art - Dickson Video Lab	experimental	X	X	1/2" 1/4" VTR's	open	Grants
Dance	Performances & Rehearsals	X	X	none		Departmental
Ethnomusicology	Performances & Research	X	X	1/4" AKAI	limited	Departmental
Music	Tapes for Opera Workshop	X				
Theater Arts	Teaching media production	X	X	extensive	limited	Departmental
Independent Centers and Units						
Ctr. Computer Based Beh. Sci.	~~Video/Computer Interface~~				limited	USAF
Curriculum Inquiry Ctr.	Resources for teacher training	X		1/2" VTR	limited	Departmental
Educational Career Services	Interview feedback	X		VTR	limited	Departmental
Media Center (TV)	Production Studio	X		Commercial VTR	open	Departmental + Recharge
Medical Media Network	Medical education programing	X			limited	Subscription + Grants
NPI Media Unit	Patient interviews/lectures	X	X	1" VTR	limited	Departmental + Grants
Teacher Education Lab	Teacher produced materials	X	X	1/2" VTR	limited	Departmental
University Elementary Sch.	Teacher Training	X		1/2" VTR (2)	limited	Departmental
Western Ctr. Continuing Ed.	Training Tapes	X				

TABLE II

USER/PRODUCERS	Uses	PRE/PART		HARDWARE	ACCESS	SUPPORT
Professional Schools						
Education	Research & Teacher Training	X	X	8mm & 16mm	limited	Departmental + Grants
Engineering Systems	Recording of Data	X		16mm	limited	Departmental
Mechanics and Structures	Documentation	X		8mm & 16mm	limited	Departmental
Health Sciences						
Anatomy	Training & Research	X		16mm	limited	Departmental
Anesthesiology	Training	X				Departmental
Bacteriology	Documentation & Teaching	X			limited	Departmental + Grants
Medicine	Training & Documentation	X		8mm & 16mm	limited	Departmental + Grants
Pathology	Research	X			limited	Departmental
Pediatrics	Teaching & Research	X		16mm	limited	Departmental
Physiology	Research	X		16mm	limited	Departmental
Surgery	Training & Research	X		16mm	limited	Departmental
Letters and Sciences						
Aerospace Studies	Teaching & Documentation	X		16mm	limited	Departmental + Grants
Anthropology	Program in Ethnographic Film	X	X	8mm & 16mm	limited	Departmental + Grants
Astronomy	Data Recording & Teaching	X	X	16mm	limited	Departmental
Biology	Teaching & Research	X	X	various	limited	Departmental + Grants
Chemistry	Teaching & Documentation	X		8mm & 16mm	limited	Departmental + Grants
Geography	Research & Teaching	X	X	16mm	limited	Departmental
Geology	Teaching	X		16mm	limited	Departmental
Journalism	Training & Documentation	X	X	8mm & 16mm	limited	Departmental
Kinesiology	Analysis & Feedback	X		8mm & 16mm	limited	Departmental
Meteorology	Research & Teaching	X	X		limited	Departmental
Physics	Research Documentation	X		16mm	limited	Departmental + Grants
Planetary & Space Science	Teaching & Documentation	X	X	16mm	limited	Departmental + Grants
Psychiatry	Teaching & Research	X	X	8mm & 16mm	limited	Departmental + Grants
Fine Arts						
Dance	Documentation & Training	X	X	none		Departmental + Grants
Theater Arts	Training in Production	X	X	extensive	limited	Departmental + Grants
Independent Centers and Units						
Asian American Center	Documentation	X	X	none		Departmental
Center for Afro-American Std.	Documentation	X	X	none		Departmental
Dental Media Unit	Procedures	X		16mm	limited	Departmental
Latin American Center	Documentation	X	X	16mm + Editing	limited	Departmental + Grants
Media Center (Media Resours)	Production	X		Commercial	open	Departmental + Recharge
Medical Media Network	Medical Education Programs	X			limited	Subscriptions + Grants
Teacher Education Lab	Teacher Ed. Materials	X	X	8mm cameras	limited	Departmental

ILLUSTRATION - GRAPHICS - STILL PHOTOS

TABLE III

USERS / PRODUCERS	Uses	PRE/PART	HARDWARE	ACCESS	SUPPORT
Professional Schools					
Architecture & Urban Plan.	Visual research in Architecture	X		limited	Departmental
Engineering	Research and Documentation	X	35mm / darkroom	limited	Departmental
Mechanics and Structures	Research prints	X	35mm	limited	Departmental
Health Sciences					
Anatomy	Teaching and Research Photos	X	35mm/4x5 Illustrator	limited	Departmental
Bacteriology	slides for teaching	X	35mm	limited	Departmental
Obstetrics & Gynecology	slides for teaching	X	35mm	limited	Departmental
Opthalmology	research photos & teaching slides	X		limited	Departmental
Pathology	Slides for teaching & research	X	35mm	limited	Departmental
Surgery	Slides for teaching, Illustration	X	Illustrator	limited	Departmental
Pharmacology	Prints & illustrations teaching	X	Illustration	limited	Departmental
Letters and Sciences					
Aerospace Studies	Photos for Research	X	35mm	limited	Departmental
Anthropology	prints & slides for research	X	35mm / darkroom	limited	Departmental
Astronomy	Research Documentation	X	35mm / darkroom	limited	Departemntal
Biological Chemistry	slides for teaching	X	35mm	limited	Departmental
Biology	slides & prints for research	X	35mm / Illustrator	limited	Departmental
Folklore	slides & prints	X		limited	Departmental
Geography	research photographs	X	35mm	limited	Departmental
History	archive of historical prints	X		limited	Departmental
Journalism	teaching, documentation	X X	35mm/24x24/4x5	limited	Departmental
Physical Education	Documentation	X X	35mm	limited	Departmental
Physics	Research Photos	X		limited	Departmental
Planetary & Space Science	Research Photos	X	35mm/24x24	limited	Departmental
Fine Arts					
Art	produce 2x2 slides for teaching	X	copy equip.	limited	Departmental
Theater Arts	Prints	X X	35mm / darkroom	limited	Departmental
Independent Centers and Units					
African Studies	Documentation & Publication	X	35mm /Illustrator	limited	Departmental
Afro-American Studies	research photos	X	35mm	limited	Departmental
Asian-American Studies	prints for publication	X	35mm	limited	Departmental
Biomedical Library	2x2 slides/prints	X		open	Library
Latin American Center	prints & slides for publications	X	35mm	limited	Departmental
Library Photo Service	flatcopy photo	X	Darkroom	open	Recharge
Media Center (Photo)	comprehensive photo service	X	commercial	open	Recharge
Medical Illustration	photo & illustration service	X	commercial	open	Recharge
NPI Media Unit	20,000 2x2 slides	X	35mm / darkroom	limited	Departmental + Grant
Printing & Production	mass duplication	X	commercial	open	Recharge
Teacher Education Library	produce still photos & slides	X	35mm / darkroom	limited	Departmental

4. Audio

Table 4 lists the various departments and agencies of the University that utilize audio systems--chiefly tape recorders--in their instructional or research activity. It is extremely difficult to gauge the scope of this particular form of media usage because of its virtual ubiquity on campus. The Inventorial Annual listed 1,995 tape recorders housed in various UCLA departments as of June 30, 1972.

5. Realia

The use of models, specimens, artifacts, or three-dimensional displays is associated largely with the sciences. Our data are less complete in this area, but the departments that make most extensive use of this medium are designated in Table 5.

6. Media Libraries

Table 6, below, presents a listing of media library resources which were drawn from the data sources described at the beginning of this appendix. We have added the supplementary information--compiled by the UCLA Media Center last spring--in the listing which follows:

African Studies Center	Film collection
Architecture and Urban Planning	Small library of student films; library of slides
Asian-American Studies Center	Asian-American student films
Chemistry	Miscellaneous tapes and films for departmental use only
Chicano Studies Center	Chicano films
Education-UES	Approximately ninety videotapes and 200 films
Management Career Programs (UNEX)	Business films
Museum of Cultural History	Ethnographic slides
National Television Library (TA)	Collection of videotapes, kinescopes

UCLA Film Archive (TA)	Collection of feature films for film study by TA students
Zoology	Small library of films and videotapes

In an effort to place some overall perspective on the matter of media activity on the UCLA campus, the Committee commissioned a telephone survey of all academic departments and research units during the winter quarter, 1973. The survey was conducted by staff assistant William B. Lee, and reached seventy-four departments, centers, and research units. All units contacted indicated that they use some form of media in their instructional and/or research activities, and seventy-three indicated they expected to rely more heavily on media in the future. The most extensive usage, as other sections of the report also confirm, was in the medical sciences.

AUDIO

TABLE IV

USER/PRODUCERS	USES	PRE/PART		HARDWARE	ACCESS	SUPPORT
Letters and Sciences						
English	Research & Teaching	X	X	1/4" R/R	limited	Departmental
English as Second Language	Teacher Ed. materials	X	X	R/R & Cassette	limited	Departmental
Folklore	Documentation	X	X	1/4" & Cassette	limited	Departmental + Grants
French	Research & Teaching	X	X	1/4" R/R & Cassette	limited	Departmental
Germanic Languages	Teaching	X	X	1/4" & Cassette	limited	Departmental
History	Oral history	X	X	1/4" & Cassette	limited	Departmental
Italian	Teaching	X	X	1/4" & Cassette	Limited	Departmental
Journalism	Teaching & Research	X	X	1/4" & Studio	limited	Departmental
Linguistics	Analysis	X	X	1/4" & special	limited	Departmental
N.E., Oriental, African Lang.	Study carrols	X		60 posts	open	Departmental
Slavic Languages	Study carrols	X		24 posts	open	Departmental
Sociology	Research	X	X	Cassette	limited	Departmental
Speech Dept. Archive	Campus speeches	X				
Fine Arts						
Ethnomusicology	Research	X		Studio/Analysis	limited	Departmental
Music	recordings of performances	X		disk/reel to reel	open	Departmental
Theater Arts	Broadcast production	X	X	Studio	limited	Departmental
Independent *Centers and Units*						
Biomedical Library	Audio Digest Tapes	X			open	Library + Medicine
Latin American Center	Documentation & Production	X	X	Editing/Recording	limited	Departmental + Grants
Media Center	Campus Production	X		Studio&Mix	open	Recharge
Medical Media Network	Medical Education	X			limited	Subscription
Phonetics Laboratory	Research	X	X	6 listening posts	limited	Departmental + Grants
Powell Library Audio Room	Historical collection	X		1/4" tape decks	open	Library
Royce Language Lab	Study carrols	X		1/4" & Cassette	open	Departmental
Teacher Education Lab	Teacher Ed. Tapes	X		1/4" R to R & Cassette	limited	Departmental
Health Sciences						
Pathology	Documentation	X		Cassette	limited	Departmental
Psychiatry	Research & Documentation	X	X	1/4" & Cassette	limited	Departmental

REALIA

TABLE V

USERS / PRODUCERS	USES	PRE/PART	HARDWARE	ACCESS	SUPPORT
Professional Schools					
Architecture & Urban Plan.	Study models	X X		limited	Departmental
Engineering	working models	X		limited	Departmental
Mechanics and Structures	working & research models	X		limited	Departmental
Health Sciences					
Anatomy	models and specimens	X		limited	Departmental
Aneshesiology	models	X		limited	Departmental
Medicine	models	X		limited	Departmental
Neurology	models	X		limited	Departmental
Nursing	models	X		limited	Departmental
Ophthalmology	models	X		limited	Departmental
Pathology	models	X		limited	Departmental
Letters and Sciences					
Aerospace Studies	models	X		limited	Departmental
Anthropology	models	X X		limited	Departmental
Biology	models, specimens	X		limited	Departmental
Geography	models	X		limited	Departmental
Geology	models	X		limited	Departmental
Fine Arts					
Art	models	X X		limited	Departmental
Independent Centers and Units					
Museum of Cultural History	display models, artifacts	X		limited	Departmental

TABLE VI

USER / PRODUCERS	USES	PRE/PART	HARDWARE	ACCESS	SUPPORT
Professional Schools					
Architecture & Urban Planning	2x2 Slides	X	35mm copy & darkrm.	open	Departmental
Health Sciences					
Anatomy	films/teaching materials	X		limited	Departmental
Bacteriology	2x2 slides & cultures	X		limited	Departmental
Biomedical Library	Audio Digest Tapes	X		open	Library
Medical Media Network	Medical Education, varied formats	X		open	Subscription
Medicine	films	X		limited	Departmental
NPI Media Unit	Films/VTR/2x2 slides (large)	X		open	Departmental + Grants
Pathology	2x2 slides	X		limited	Departmental
Surgery	films & 2x2 slides	X		limited	Departmental
Letters and Sciences					
Aerospace Studies	instructional materials	X		limited	Departmental
Anthropology	films	X		limited	Departmental
Biology	instructional materials	X		limited	Departmental
Folklore	2x2 slides & film	X		limited	Departmental
Journalism	teaching materials	X		limited	Departmental
Physical Education	films	X	16mm projectors	limited	Departmental
Meteorology	teaching materials	X		limited	Departmental
Military Science	Films	X	16mm projector	limited	Departmental
Physics	teaching materials	X	16mm & 35mm	limited	Departmental
Planetary & Space Science	teaching materials	X		limited	Departmental
Speech	recordings of campus speakers	X		open	Departmental
Fine Arts					
Art (Visual Aids)	2x2 slides of art subjects	X	2x2 projectors	limited	Departmental
Ethnomusicology	research disks & tapes	X		limited	Departmental
Music	Music performances	X		open	Departmental + Library
Theater Arts	Films & Video	X		limited	Departmental + Grants
Independent Centers and Units					
Curriculum Inquiry Center	VTR, Filmstrips, films, Teacher Ed.	X	VTR/Filmstrip/film	limited	Education
Instructional Media Library	Films/VTR/2x2 slides	X		open	Recharge
Latin American Center	films & tapes on Latin Amer.	X	16mm & 35mm proj.	open	Departmental + Recharge
Powell Library Audio Room	historical materials	X	1/4" playback	open	Library

APPENDIX C
NEW TECHNOLOGY

What is the level of the technology in use on this campus compared with the state-of-the-art generally? Advances in media technology are occurring at such a rate and in so many different quarters that it was impossible to provide an accurate catalog of them in the time available. What follows is a very limited list of emerging technical innovations. This information was provided by Mr. Morris Wakefield, senior engineer in research and development at the Media Center. So far as is known to us, none of this equipment is presently in use on the UCLA campus except for a disc recording unit in the Department of Radiology.

1. Visual Technology

A. Endoscopic Camera

This is a tiny fiber-optic bundle which is inserted into the human body for immediate visual color projection of internal organs. It carries its own illumination mechanism and can be coupled with a surgical knife for concurrent surgical procedures. In addition to its obvious value as a diagnostic tool, it has also been used to project to mass secondary audiences internal surgical procedures which would otherwise be visible only to immediate observers. It is now commercially available. Linguistics has a fiber optics bundle, and the Media Center will purchase a color camera to go with it, using the UCLA Innovative Grant.

B. Holography

This is a visual system which can photograph and project true three-dimensional images. It has been used to record images of historical artifacts, art objects, architecture, and similar spatial objects. At present, it is available only in black and white projection. It is presently being used industrially, and in advertising, but is not developed to the extent desired for educational uses.

C: Solid-State Imaging Devices

The most immediate visible consequence of developments in solid-state imaging units is the replacement of conventional cathoderay tubes with imaging devices that reduce the depth of television receivers to a size that can be suspended in or hung on walls. This permits either permanent installation or easy portability of large TV receivers. These devices are in laboratory prototype. Very simple ones are on the market, and they may be commercially available in improved form in two to three years.

II. Audio Technology-Audio Compressor-Expander

This unit has the capability of either compressing or expanding recorded oral speech up to about forty percent without distortion. A one-hour recording, for example, can be reduced to thirty-six minutes, or expanded in the same proportion. This system has obvious implications for storage of oral materials, transcription of group speech, language instruction, and phonetics research, among other applications. These devices are commercially available. One has been ordered by the Department of Sociology.

III. Recording Technology

A. Video Disc Recording

A system of recording visual and audio imagery in color on discs from a standard video input is now operational. The disc possesses significant advantages over reel-to-reel videotape or cassettes. It can provide a still-frame image without loss of resolution; it permits immediate retrieval of any segment or portion of the recording (as opposed to winding or rewinding of tape); it is more durable than videotape; and twenty-five discs can be stored in the space required by a single reel of videotape. The device is about ready to come to the market, but is not there yet.

B. Four-by-Five Digital File Card

Although still in developmental stages, this is probably the most dramatic breakthrough in recording technology. The system enables a thirty-minute video or audio recording to be placed on one four-by-five-inch file card and plays back from the same card. The potential impact of this system on methods of storage and projection of audio-visual materials is revolutionary in scope, and a prototype is expected to be demonstrated by its manufacturer sometime this year. The card is now in the laboratory prototype stage.

APPENDIX D

GENERAL POLICY CONSIDERATIONS

Precisely how campus media resources can be best coordinated in our particular environment is not obvious, but the need for improvement is. How the systems approach, cost-effective use, and other management concepts might be applicable needs to be explored. At this time adequate data and analyses are lacking.

An important first step is to examine the major functions associated with University media and for each function determine if it is adequate and efficient and if it can be expected to remain so; how it can be improved and if it should be improved; and how interactions among functions can be improved.

To the extent that each of these functions can be described in quantitative terms (size of staff, amount of equipment, floor space, output, cost, level of quality, response time, etc.), it should be possible to establish criteria for judging media efforts and for planning how resources may be most effectively organized (i.e., where economies of scale, centralization, time, convenience, etc., may be achieved). This kind of data was not abundantly available in a form directly usable by the Committee. The data most accessible were on the Media Center and the Medical Center. While most of the functions have been discussed in the body of this report, four remain and are included here: organization and administration; effectiveness of learning resources; funding; and research.

I. Organization and Administration

At present, physical resources and administrative responsibilities are (often separately) distributed among a variety of organizational units: the autonomous faculty member; the research laboratory; the department; the center; and so on.

The Committee has considered what kinds of physical and administration forms would satisfy efficiency, University policy, faculty atonomy, changes in University roles, and changes in media demand and media technology. Moves toward greater integration and some centralization are needed, but the precise range and division of responsibilities, lines of authority, and organization form are not obvious to us at this point. Considerably more study will be required before firm recommendations can be made on the organization question; however, specific administrative efforts which might be considered include the following:

- Providing or encouraging faculty development workshops to give individual faculty members and academic units an opportunity to consider the challenges to current patterns of instruction and to become familiar with alternative patterns.

- Strengthening support to the faculty in instructional design and evaluation so that the faculty can have access to consultative aid in applying learning resources to their instruction.

- Creating new forms of recognition for faculty members working effectively toward the improvement of their instruction.

- Conducting an active program of communications to inform faculty members of developments relevant to their instruction and resources available for their use.

- Organizing channels of communication through which faculty members can make their support requirements known easily and continually to the administrative support groups.

- Comparing existing support services with the support requirements identified by the faculty.

While these initiatives are presented as ways for the administration to pursue its responsibility to make change possible, they need not, and should not, be pursued unilaterally. As many faculty members as possible should be involved in the development and implementation of programs such as these. This involvement need not produce a new wave of faculty committees or mass meetings; but might involve some newer approaches to information flow, such as Delphi-type surveys.

II. Availability of Learning Resources Support Services

Campus wide support services are available at UCLA in support of each of the stages of the instructional process, planning, development, implementation, and evaluation. However, two points may be made on the basis of close review of these services:

- Far more staff members, equipment, and facilities are associated with the Developing and Implementing stages than are associated with the Planning and Evaluating stages.

- In many service areas, the aggregate of departmental capabilities exceeds the capabilities of campus-wide service units.

Some recognition should be given at this point to the temptation to measure the responsiveness of services by the absolute volume of faculty requests for those services. While the fact of demand for a given service certainly is an indicator of need for that service, that specific demand provides little information on other services for which needs may exist. Stated differently, evidence that a given service is responsive to need does not constitute evidence that all required services are being provided. Similarly, there are hazards in assuming that demand for a given service will continue into the future, as a simple projection of past demand. These hazards can be avoided only by continuous monitoring of support requirements.

III. Funding

Although the activities noted above form a functional chain, it does not automatically follow that all links must be forged on campus. Some might be more efficiently implemented through outside services. Still, care should be taken not to fragment media services any further without excellent reason. The Media Center has been making steady progress toward building an integrated on-campus system. Where outside services are less expensive, the first step should be to see what we can do to improve our own operations, since the convenience, control, faculty participation, etc., which an integrated campus system offers, could be important in promoting further growth of media use.

IV. Research

How did Aristotle's father evaluate the education his son received from Plato, or Plato's father Socrates' endeavors for his son? Presumably, by the time the students were of what is now college age, some combination of the student's reaction and the father's impression of how much the student knew or could do sufficed. In principle, the fact that people still esteem the writings of both students might be inserted into the set of relevant considerations, but it was not available then. The point is, of course, that judgment, either by the student, his parents, or society--contemporary or subsequent--must be used, even if some aspects of the process can be quantified and objectified; and we must presume that the evaluation covers not only the content, but the instructional effectiveness of the educational process.

Past research on the effectiveness of media in university instruction is, in the strict sense, either uninterpretable or inconclusive. That is, it has not been possible to show that the use of media either improves or decreases educational results as measured in performance terms. We are thus left with the kind of dependence upon indirect indicators or judgment that may make us uneasy about making large investments. For reasons such as those set forth throughout this report, the Committee believes that the use of media in instruction is important and will become more important. It therefore suggests a line of research on the ways media are being used, on ideas for its use, on judgments of those who have used it or seen it used, and on studies of possible advantageous uses.

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